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NUCLEAR WASTE MANAGEMENT PROGRAM PROCEDURE

NP 13-1
CONTROL OF SAMPLES AND CHEMICAL STANDARDS
Revision 2

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1.0 Purpose and Scope

This procedure prescribes the Sandia National Laboratories (SNL) Nuclear Waste Management Program (NWMP) process for ensuring samples are identified and controlled in a manner consistent with their intended use. Controlling documents shall identify responsibilities, including interfaces between organizations, for documenting and tracking sample possession (chain-of-custody[1]) from sample collection and identification (including *in situ* orientation relative to location as appropriate) through handling, preservation, cleaning, shipment, transfer, analysis, storage, final use and disposition. The purpose of these controls is to ensure that a complete record of samples and standards traceability is maintained, which includes an appropriate traceability of the chemicals used to prepare samples and standards. We define a sample as a representative fraction of a material analyzed to determine the characteristics (e.g. physical, chemical) of this material and a chemical as a substance characterized by definite molecular composition, employed in the preparation of a sample. We define a standard as an accepted reference sample used for establishing a unit for the measurement of a physical or chemical quantity.

> **Note**: Additional requirements may need to be addressed i.e., corporate, site specific, and Environment, Health and Safety policies. For packaging and shipping of hazardous materials, consult the SNL ES&H Manual, Chapter 12 “Packaging and Transportation of Hazardous Materials,” MN471001, http:\\www-irn.sandia.gov/corpdata/esh-manuals/mn471001/c12.htm or contact Center 6800 ES&H Coordinator.

Acronyms and definitions for terms used in this procedure may be found in the NWMP Glossary located at the Sandia National Laboratories (SNL) NWMP On-line Documents web site.

2.0 Implementation Actions

2.1 Controlling Documents

Test plans (NP 20-1) and/or Activity/Project Specific Procedures (SP) may be used to define sample preparation, handling, preservation, cleaning, shipment, transfer, analysis, storage, and final

[1] Chain of custody requirements are not common among all NWMP programs, and may be addressed in specific implementing procedures.

disposition. Sample collection and analyses may also be documented in scientific notebooks as described in NP 20-2 (Scientific Notebooks [SN]). Planning documents are required to ensure that sample collection methods, controls, and identification result in samples, which are appropriate for their intended use.

2.2 Sample and Chemical Identification

Samples shall be collected or created in accordance with the appropriate controlling work documents. Sample control measures, including identification and documentation shall ensure traceability continuously from collection through final disposition. These measures shall include an unique sample identifier, sample location, other pertinent information concerning the sample, and recorded in the drilling log, scientific notebook, on sample information forms (i.e., Chain of Custody), or other appropriate records format. Sample identification shall be verified and documented before each transfer or release for analysis, testing, or disposition. If a sample has a maximum life expectancy or expiration date, that date shall be documented on the sample or sample container whenever possible. As a minimum, the sample shall be marked or tagged as “limited-life” material.

> **Note:** Representative samples from difficult to repeat sample collection activities, such as principal boreholes, shall be maintained as an archive sample. The controlling work document(s) shall specify the representative samples to be archived. If the representative sample has a maximum life expectancy or expiration date, that date shall be documented on the sample or sample container, if possible. As a minimum, the representative archive sample shall be marked or tagged as “limited-life material.”

Sample identification shall be maintained by placing clear, legible, and permanent identification directly on the samples, if possible, or in a manner that ensures that identification is maintained. If direct physical markings are either impractical or insufficient, other appropriate means shall be employed e.g., physical separation, labels or tags attached to containers. Label markings must not detrimentally affect the sample content, integrity, or form. If sample labels become obliterated or hidden by surface treatments or sample preparation, other means of identification must be substituted.

Markings and labels shall indicate the need for special environments or other special controls. If samples are sub-divided or sub-sampled, the unique identification must be transferred to each sub-sample part or sub-sample container part that requires identification.

The chemicals used to prepare samples and standards shall be identified by their name, manufacture name, lot number, and expiration date when applicable.

2.3 Conditions Adverse to Quality or Significant Conditions Adverse to Quality Samples

Deviations from sample control requirements shall be documented as a Condition Adverse to Quality (CAQ) or Significant Condition Adverse to Quality (SCAQ) in accordance with the process specified in NP 16-1 (Corrective Action). Deviations include, but are not limited to, the following:

- Improper handling and/or shipping
- Loss of traceability
- Loss of identity
- Lost samples
- Use of samples or chemicals after expired lifetimes

- Chain of custody violations (Note: refer to SP 13-1 [Chain of Custody] for requirements)
- Damaged samples (e.g., from temperature extreme)

A CAQ or SCAQ sample shall be segregated or appropriately identified (tags, markings) to prevent inadvertent use. Further processing of the sample shall be controlled until the deviation is evaluated, and the situation resolved. A CAQ or SCAQ sample may be used if the person requesting the sample data evaluates the situation and concludes that use of the sample is appropriate, however, the sample's deviation status must accompany the sample data. This evaluation is documented as part of the NP 16-1 Corrective Action process. Samples evaluated through this process shall be categorized in one of the following three ways: "Use-As-Is," "Limited Use," or "Discard." This categorization shall be documented as part of the deviation. Samples that has lost their identity or when sample identification cannot be determined *shall not be used* in further investigations and documented as a CAQ or a SCAQ.

A CAQ or SCAQ chemical, sample, or standard shall not be used in further investigations; it shall be segregated from the non-CAQ or non-SCAQ chemicals.

2.4 Handling, Storing, and Shipping Samples

The person in charge of sample collection/creation shall ensure that samples are protected during shipping and handling to prevent damage or deterioration that would compromise the intended use of the samples, and therefore the data derived from sample analysis. Samples collected by an organization other than SNL NWMP shall be handled and shipped in accordance with the requirements of that organization until the sample becomes the responsibility of the SNL NWMP.

Methods shall be established for samples requiring storage. The control of sample identification for the planned storage and duration shall provide for the maintenance or replacement of markings and identification tags that have been damaged during handling or aging and the protection of identification markings from deterioration due to environmental conditions.

Controlling documents shall be developed to specify any special protective environments (e.g., inert atmospheres, specific moisture content levels, or temperature levels) and equipment (e.g., containers) required for the samples. These documents or procedures shall be issued *prior to* collecting, handling, and shipping samples; and shall address the creation and maintenance of such environments. Specific requirements for handling, storage, cleaning, analysis, packaging, shipping, and preservation of critical, sensitive, perishable, archive or high-value samples shall be developed, implemented, and verified when applicable.

Chemicals shall be appropriately stored. A CAQ or SCAQ chemical shall be immediately (i.e. at the time such a chemical is declared CAQ or SCAQ) segregated from the non-CAQ or non-SCAQ chemicals (e.g. on the expiration date).

2.5 Sample Storage/Archiving

When samples are not in the possession of the individual designated with their custody, they shall be stored in a secure area with associated documentation (i.e., Chain of Custody). A secure area is defined as an area where access to the samples is limited and controlled, e.g., locked rooms, cabinets, desks, drawers. Samples shall be controlled to preclude the mixing of like samples. Samples for which analyses or tests have been performed shall be identified and maintained in a separate part of the storage area. When chemicals are not in use, they shall be stored in the appropriate storage place.

Samples and chemicals shall be stored in areas where the environment is controlled to prevent their degradation. Upon expiration of limited lifetime samples or chemicals, the samples or chemicals should be properly discarded (if hazardous and/or radiactive, contact Center 6800 ES&H coordinator for guidance) . If expired samples or chemicals are not discarded (for legal or other reasons) they shall be segregated or suitably identified (tags, markings) to prevent their use.

Archiving of samples is done to preserve them for future investigation or review. The organization responsible for archiving samples shall have a documented and approved process for accomplishing the archiving task. This controlling document shall include procedures for identifying, tracing, and retrieving archived samples and standards, and shall provide for controlled environmental conditions commensurate with the intended use of the samples and standards. Maintenance or replacement of markings or identification tags needed to preserve sample identification shall also be addressed.

2.6 Sample Disposition

Controlling documents should provide requirements for the disposition of samples. If samples are disposed, the method, place, and date of disposal must be documented.

3.0 Records

Note: Implementation of NP 13-1 generates uniquely labeled samples and associated records pertaining to their use, collection, tracking, analysis, and dispostion. Applicable sampling procedures (TPs, SPs, or other implementing procedures) are controlled by other NPs (for example, 20-1, or 20-2.)

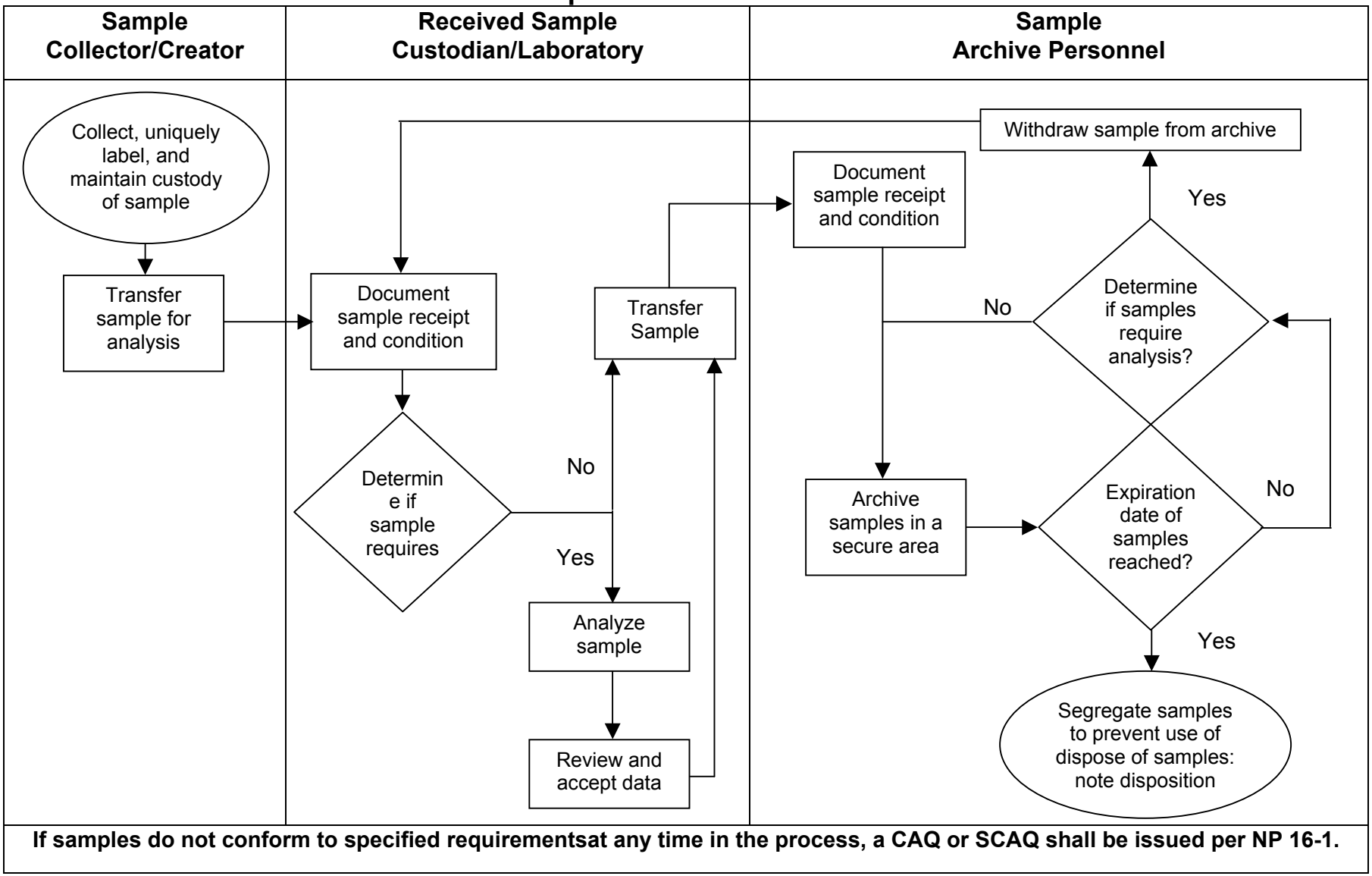
The following QA records, which may be generated through implementation of this procedure, shall be prepared and submitted to the NWMP Records Center in accordance with NP 17-1 (Records):

QA Record	Preparer	Records Submitter
• drilling logs • field sampling notebooks • sample inventory lists • sample archive maps • scientific notebooks • data packages	Initially the sample collector/ creator. Responsibility shifts to the sample custodian.	per controlling document(s)

4.0 Appendices

Appendix A: NP 13-1 Sample Control Process Flowchart

Appendix A
NP 13-1 Sample Control Process Flowchart



If samples do not conform to specified requirementsat any time in the process, a CAQ or SCAQ shall be issued per NP 16-1.